Solution Session

Research Transparency Priorities and Infrastructure

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Abstract

In this interactive session, we invite participants to try out and give feedback on Research Transparency Check, new software providing a quick assessment of the transparency of research reports. The software determines the presence of information on criteria of research transparency, and, for a set of criteria for which ground truth is available, the accuracy of the information in the research report. The assessments feed a dashboard providing a colourful overview of the level of transparency. Comparisons with best practices produce a detailed set of actionable suggestions for improvements in the research report.

We reuse packages and tools for automated extraction and diagnosis of information in research reports for which open data and open source software are available in a publicly accessible infrastructure. In our view, research transparency checks are most beneficial in the preprint phase of a research project, because they can prevent errors entering the review system.

We demonstrate the value of the infrastructure for editors at journals, scholars writing research reports, and supervisors of students. We invite participants in the session to suggest which indicators should be prioritized in the development of modules. Also we invite participants to try out the software, and provide user feedback on the accuracy and functionality and the fit with user needs.

In our view, research checks are most beneficial in the preprint phase of a research report, as this is when errors and poor research practices can still be corrected before peer review or publication. To support this goal, Daniël Lakens and Lisa DeBruine developed Papercheck, an R package that integrates various modules to assess best practices, verify accuracy of information, and provide detailed, actionable suggestions for improving research reports.
Leveraging Papercheck's modular flexibility, we introduce Research Transparency Check, a module that assesses the presence of open data and open-source software in research reports available in publicly accessible infrastructures. This module utilizes existing R packages for automated extraction and evaluation of information. In this session, we demonstrate the value of Papercheck and the Research Transparency Check module for journal editors, peer reviewers, researchers, and student supervisors. We invite participants to try out the tool, provide feedback, and contribute to discussions on prioritizing indicators for future module development.

In the session we aim to produce two sorts of output: 1) a ranked priority list of indicators for research transparency in data communities (working with different sources of data, such as surveys, interviews, social media, and register data) present at the conference; 2) user feedback on the accuracy and functionality and the fit with user needs of the software in a beta test.

Participants do not need any equipment for the discussion of transparency criteria priorities. Participants bringing laptops can do live beta testing of the software.

The first part of the session is a co-design workshop. Groups of 3-5 researchers produce a ranked list of indicators that research reports should be transparent about. After an individual brainstorm going through the entire research life cycle, the group sorts the ideas, prioritizes the indicators, and reports back in a plenary session. Collectively, we go through the commonalities between the priorities of the various data communities.

In the second part, participants work individually or in pairs to beta test the software by taking preprints they know well, such as one of their own, a paper they have recently reviewed, or a ‘famous’ paper in their field of expertise. We invite participants to give feedback on the results, and to provide suggestions for training and evaluation data to improve the tool. We work in a shared document pre-filled with potential testing activities, which participants can share results for.

Specific questions for this part are:

• Which suboptimal research practices can be detected through "rule-based" approaches? For example, finding terms like "marginally significant" or "observed power". A rule-based approach can also compute information, as Statcheck does, or follow a link and check the information, such as whether an OSF page is open.

• Which suboptimal practices can be detected through natural language processing approaches? For example, classifying statistical inferences about p-values and bayes factors as correct or incorrect.

• Which data sources exist where meta-scientists have classified the presence or absence of best practices, and can they be used in rule-based or natural language processing algorithms?

• Which meta-scientific questions could we answer with a tool like this?